

CLAIMS

1. A DNA encoding a polypeptide comprising an entire sequence of the amino acid sequence as shown by

u ~~SEQ ID NO: 1~~ **SEQ ID NO: 2**

5 ~~SEQ ID NO: 1~~ of Sequence Listing or a partial sequence thereof, or a polypeptide comprising the polypeptide described above, wherein any of the polypeptides has an activity of a receptor capable of binding to a murine PBSF/SDF-1.

10 2. A DNA encoding a polypeptide resulting from at least one of deletion, addition, insertion, or substitution of one or more amino acid residues in an entire sequence of

a the amino acid sequence as shown by **SEQ ID NO: 2** ~~SEQ ID NO: 1~~ of

15 Sequence Listing or a partial sequence thereof, wherein any of the polypeptides has an activity of a receptor capable of binding to a murine PBSF/SDF-1.

20 3. A DNA comprising an entire sequence of the nucleotide sequence as shown by SEQ ID NO: 1 of Sequence Listing or a partial sequence thereof, or a DNA comprising the DNA described above, wherein any of the DNAs encodes a polypeptide having an activity of a receptor capable of binding to a murine PBSF/SDF-1.

4. A DNA resulting from at least one of deletion, addition, insertion, or substitution of one or more bases in a DNA comprising an entire sequence of the nucleotide sequence as shown by SEQ ID NO: 1 of Sequence Listing or a partial sequence thereof, or a DNA comprising the DNA, wherein any of the DNAs encodes a polypeptide having an activity of a receptor capable of binding to a murine PBSF/SDF-1.

5. A DNA being capable of hybridizing under stringent conditions with the DNA of any one of claims 1 to 4, and encoding a polypeptide having an activity of a receptor capable of binding to a murine PBSF/SDF-1.

6. A polypeptide encoded by the DNA of ~~any one of claims 1 to 5~~ <sup>claim 1</sup>, wherein the polypeptide has an activity of a receptor capable of binding to a murine PBSF/SDF-1.

7. A polypeptide comprising an entire amino acid sequence as shown by ~~SEQ ID NO: 1~~ <sup>SEQ ID NO: 2</sup> of Sequence Listing or a partial sequence thereof, or a polypeptide comprising the polypeptide described above, wherein any of the polypeptides has an activity of a receptor capable of binding to a murine PBSF/SDF-1.

8. A polypeptide resulting from at least one of deletion, addition, insertion, or substitution of one or more amino acid residues in an entire amino acid sequence as shown by ~~SEQ ID NO. 17~~ <sup>SEQ ID NO: 2</sup> of Sequence Listing or a partial sequence thereof, wherein the polypeptide has an activity of a receptor capable of binding to a murine PBSF/SDF-1.

9. The polypeptide according to any one of claims 6 to 8, derived from a murine pre-B-cell line DW34.

10. An expression vector carrying the DNA according to ~~any one of claims 1 to 5.~~ <sup>Claim 1</sup>

11. A transformant obtained by introducing the expression vector according to claim 10 into a host.

12. The transformant according to claim 11, wherein the host is a mammalian cell line.

13. A method for producing a polypeptide having an activity of a receptor capable of binding to a murine PBSF/SDF-1, characterized in that the method comprises culturing the transformant according to claim 11 or 12 under conditions capable of expressing the expression vector according to claim 10.

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14. A monoclonal antibody against the polypeptide  
a according to ~~any one of claims 6 to 9.~~ <sup>Claim 6</sup>

15. A pharmaceutical composition for the use as an AIDS  
onset inhibitor or an HIV-1 infection inhibitor,  
comprising a murine PBSF/SDF-1.

a 16. Cells expressing the polypeptide according to ~~any one~~  
a ~~of claims 6 to 9~~ <sup>Claim 6</sup> and a human CD4 protein.

17. A method of screening an AIDS onset inhibitor or an  
HIV-1 infection inhibitor, characterized in that the  
method comprises the steps of:

(a) mixing the cells expressing the polypeptide according  
15 a ~~to any one of claims 6 to 9,~~ <sup>Claim 4</sup> or cells according to  
claim 16; a human T-cell-line-tropic HIV-1; and a  
substance to be screened, and incubating the  
resulting mixture; and

(b) analyzing localization of an HIV-1 in the cells.

18. The method according to claim 17, wherein the step of  
analyzing localization of an HIV-1 is carried out by using  
a monoclonal antibody against a human T-cell-line-tropic  
HIV-1.

19. A method of screening an AIDS onset inhibitor or an HIV-1 infection inhibitor, characterized in that the method comprises the steps of:

5 a (a) mixing the cells expressing the polypeptide according to ~~any one of claims 6 to 9~~, or cells according to claim 16; cells expressing an HIV-1 envelope protein; and a substance to be screened, and incubating the resulting mixture; and

10 (b) determining a level of the fusion of the above cells with the cells expressing an HIV-1 envelope protein.

20. A method of screening an AIDS onset inhibitor or an HIV-1 infection inhibitor, or a PBSF/SDF-1 agonist or antagonist, characterized in that the method comprises the steps of:

15 a (a) mixing the cells expressing the polypeptide according to ~~any one of claims 6 to 9~~, or cells according to claim 16; a murine or human PBSF/SDF-1; and a substance to be screened, and incubating the resulting mixture; and

20 (b) determining an intracellular calcium ion level and/or determining a binding activity of an expressed polypeptide with the murine or human PBSF/SDF-1.

25 21. The method according to claim 20, wherein the

antagonist is a hematopoietic stem cell liberator.

22. A kit for detecting an AIDS onset or an HIV-1 infection, comprising the cells expressing the polypeptide

5 <sup>a</sup> according to ~~any one of claims 6 to 9~~, or cells according to claim 16.

23. A method for detecting an AIDS onset or an HIV-1 infection, characterized in that the method comprises;

- 10 (a) mixing the cells expressing the polypeptide according to ~~any one of claims 6 to 9~~, or cells according to claim 16 with sera, blood cells or blood of a patient suspected to be infected with an HIV-1, and incubating the resulting mixture, and
- 15 (b) analyzing localization of an HIV-1 in the cells or determining a level of the fusion of the cells with HIV-1-infected cells.

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